

High Performance in Emergency Preparedness and Response: Disaster Type Differences

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Governments are routinely called upon to assist when their citizens are confronted by any of a wide variety of disasters—from floods to earthquakes, pandemic disease to terrorist attacks, fires to tornadoes. What accounts for whether governments will be able to provide effective responses to unfolding events? How can they best be organized to respond to significant emergencies? What must they do in advance to create the capacities they will need in the face of disasters?

All significant emergency events share certain features. They are characterized by high stakes and urgency—the likelihood of major, imminent losses to life, health, property, heritage, or other valued social or private assets. They involve substantial uncertainty about likely outcomes, as well as a high degree of contingency – i.e., variability in possible outcomes resulting from different choices of action. Much is at stake, the results depend on what we do—but we do not know for certain which course of action will be best. This implies that those working on the emergency will be operating in conditions of high stress.

Notwithstanding these similarities, we can distinguish three different types of disaster situations: routine

emergencies, crisis emergencies, and emergent crises. Each presents a different set of challenges in both execution and planning. Each yields to different forms of leadership. Each requires different skills and processes for effective performance, and therefore, requires different forms of organization, resource provision, skill-building, practice, and other preparation in advance.

As the United States works to improve its disaster response capabilities to better face the challenges of major natural disasters, technology failures, infectious disease, and terrorism, it needs to recognize these differences and develop the distinctive competencies needed to respond to each type with excellent performance.

Responding to "Routine Emergencies"

When a particular type of emergency happens sufficiently frequently in a location where people have the resources to organize and prepare, it becomes a routine event. These are routine emergencies, even when quite severe, because regularity creates the opportunity for organized preparation and practiced response – for example, even a severe residential or commercial structure fire, a moderate

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earthquake in an earthquake zone, a typical hurricane in a region where hurricanes are frequent. Familiarity makes such events manageable.

Imagine a serious highway accident in which three passenger cars collide with a jackknifing tractor-trailer on a freeway, injuring six people—three severely—while disrupting traffic for miles in both directions. Emergency calls go out to state police, the fire department, the ambulance service, a nearby hospital, the highway department, and a private towing company. Each group responds and takes care of different dimensions of the emergency. The police take command of traffic flow, routing lines of vehicles past the accident site, and maintain security around the crash scene. Emergency medical personnel minister to the victims, quickly assessing which ones should receive what kinds of attention in what order of priority. Firefighters douse the flames enveloping an auto. Hospital emergency staff,

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alerted by the emergency medical technicians, ready teams to treat the specific medical needs of the most severely injured victims. Highway department personnel oversee private wrecking crews that remove damaged vehicles from the site. Within a few hours, the injured have been cared for, damaged vehicles have been removed from the accident scene, and traffic is once more flowing.

While each highway accident differs in its details, the fact that similar situations have been faced many times before means that

response organizations have learned lessons and developed procedures, trained the appropriate professionals, and given them practice so they can deploy and act quickly by ingrained experience. The key elements of excellent response in such situations are:

- **High Awareness:** Developing a detailed understanding of the nature of this “kind” of situation and an understanding of its key elements—so that we know what facts and observations are relevant and, therefore, which to collect;
- **Comprehensive Scripts:** Well-engineered general “routines” that provide step by step assignment of roles and responsibilities for dealing with the emergency;
- **Modest Customization:** Well-defined methods for adapting the general routine to the specific instance;
- **Precision Execution:** Implementing well-designed and practiced routines precisely and accurately;
- **Well-Defined, Highly-Developed Skills:** Training in the skills necessary to customize and execute the routines;
- **Leadership:** Leaders who are
 - Trained in the knowledge and methods of the situation and response;
 - Practiced at organizing, deciding, and directing execution in this type of situation;
 - Selected on the basis of their prior training, experience, and performance as better able than others to organize and direct responses of this kind;
- **Command presence:** A leadership approach (generally, an authority-based command and control structure) that performs well in directing the

customization and execution of the routines;

- **Recognition-primed decisions:** The ability, through training, practice, and operational experience, to recognize patterns of circumstances and trigger appropriate, nearly autonomic responses; and
- **Hierarchical Structure:** An organizational structure (generally, a hierarchical system) well suited to customizing general routines to specific circumstances and executing them effectively.

In short, organizations that perform well in a routine emergency environment are based in a well-defined, well-developed, and ingrained expertise about the nature of emergencies of this type, in the knowledge of how to handle them, and in the skills necessary to deploy that knowledge. This expertise is at once substantive, procedural, and organizational. It involves factual knowledge of how situations of this kind evolve and what the key factors are, an understanding of and ability to deploy the relevant response actions and routines, and an ability to operate effectively in an organizational setting.

The Demands of “Crisis Emergencies”

Some emergencies are not like those we have previously experienced. Because of unusual scale, a previously unknown cause, or an atypical combination of causes, responders face novel challenges, the facts and implications of which cannot be completely assimilated in the moment of crisis. The 2004 South Asian tsunami far exceeded immediately available capacities for response. In 2005, Hurricane Katrina, with novel combinations of flooding and infrastructure loss, created unusual needs and simultaneously invalidated standard responses. The earthquake in Pakistan several months later simultaneously created needs and

destroyed available capacity. These are crisis emergencies.

In a crisis emergency, the presence of significant novelty ensures that understanding of the situation, at least at the outset, will be relatively low. There will be no executable script that provides a comprehensive, reliable, and fully adequate response. Existing routines will be inadequate to the demands of the moment and may even be counter-productive given the novel circumstances faced. Dealing with a crisis emergency thus means that the response will necessarily operate beyond the boundary of planned and resourced capabilities. It will necessarily be unplanned (or, at least, incompletely planned), and resources and capabilities will generally be (or seem) inadequate. We can divide these challenges

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into three phases: first, the establishment of awareness, during an “understanding” phase; second, the development of a design for action, during a “design” phase; and third, the implementation of the chosen actions, during an “execution” phase characterized by implementation of unpracticed actions that go well beyond our existing plans and resources. This process then continues as observations of the results of the actions build understanding of the new situation as it continues to evolve.

Excellence in coping with crisis emergencies, therefore, means dealing effectively with the specific challenges that novel circumstances generate:

- **Low Awareness:** By definition, the novelty of the situation implies that there

is less than complete understanding of the circumstances—or even of which circumstances are relevant. Responders do not necessarily know which facts and observations are relevant and, therefore, which to collect;

- **Lack of Comprehensive Scripts:** Scripts developed for routine situations may be applicable, but they may prove inadequate in scale – or even counterproductive as a result of conditions not previously encountered in tandem. By definition, there is no comprehensive “playbook” from which the response can be directed;

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- **Major Customization:** The existence of significant novelty implies that significant customization or improvisation is likely to be needed. Existing routines may provide useful elements of the response, but may have to be creatively adapted and melded in unusual and unpracticed combinations;
- **Fault-tolerant Execution:** Because newly improvised approaches or previously untried combinations of existing routines may be implemented, execution is likely to be much less precise than in routine circumstances, which calls for more tolerance of imperfections and errors in execution;
- **Incompletely Specified Skills:** Since new actions may be taken, skills will not

have been comprehensively developed for either the design or the execution of the required response. While existing skills will be useful, the need for the relevant skill base for components of what is being invented and improvised cannot reasonably have been foreseen and likely will not be available;

- **Muted command presence:** A leadership approach generally oriented to producing effective collaboration. It will seek to facilitate the development of understanding and the design of a new approach through invention and improvisation—followed by a more authority-driven approach during the execution phase;
- **Cognitively-driven decisions:** Given the uncertainties born of novelty and the corresponding lack of available comprehensive routines, decisions cannot reliably be driven by pattern recognition (because, by definition, the patterns are not available). Decision making must proceed through a standard analytical process: the identification of objectives, the development of alternatives, the prediction of likely results from different approaches, and the choice of a best action;
- **“Variably Flattened” Structure:** An organizational structure well suited to collecting a broad range of information (because, at least in the early phases, it will not necessarily be clear what information is relevant) and to absorbing and processing it and developing a range of alternatives. This initially calls for a “flattened” structure, but in the later phases a more hierarchical structure is probably necessary to execute the chosen approach reasonably efficiently.

The essence of effective response to novel or crisis emergencies thus also lies in a form of

expertise, but in a very different form than the expertise used in routine emergencies. In the face of novelty, no one is a “substantive” expert—no one knows precisely what to do. Response leaders, under stress, have to think their way through—developing understanding of a situation with potentially great and unknown uncertainties, analyzing possible courses of action, and then executing untried, untested, and unperfected sequences of actions. Leading people and organizations through such an intrinsically chaotic experience requires a form of expertise—expertise in adaptive leadership, a very different form of leadership than that used by successful leaders in routine emergencies.

The Special Challenges of Emergent Crises

Many emergency situations occur suddenly and are unavoidably noticeable: a major earthquake, the landfall of a major hurricane, a bomb blast. Although there may be more or less warning, the main event will not be subtle or difficult to notice.

But some forms of crisis do not arrive suddenly. They fester and grow, arising from more ordinary circumstances that often mask their appearance. We term such situations emergent crises – a special and especially difficult category. When SARS emerged in south China in the winter of 2002–2003, it appeared first as a series of unexplained deaths in a region that has, annually, many unexplained deaths. The famous 1979 nuclear accident at the Three Mile Island power plant in Pennsylvania started as a simple pump failure—out of which spun an escalating series of failures and mistakes until a major crisis was underway.

What makes emergent crises problematic? First, they arise from normally variable operating conditions, making emerging problems difficult to spot as a break from typical operating and response patterns. There

had been previous pump failures at Three Mile Island, and these had always responded to the routine procedures that were applied at the time of the crisis. But two other challenges also arise in recognizing emergent crises.

When and if the problem is spotted, an individual or group with technical expertise in the issue (as it is understood at the time) is generally assigned to address it. These responders are likely to take “ownership” of the problem and its resolution. Generally, this will work: The situation will be correctly diagnosed, the team chosen because of its capacity to address situations of this type, and the response sized appropriately to address the problem.

But what if the diagnosis is not entirely correct? If the standard approach doesn’t work? If the response is too small or too late? A second major challenge of coping with emerging crisis situations is that the initial responder(s), if not immediately successful, either fail to diagnose their inadequacies or resist calling for additional help. Often, experts (and, perhaps even more so, teams of experts) are not adept at recognizing that their approach is not working. Often, they ignore “disconfirming evidence” (i.e., the flow of data tending to show that what they are doing is not working) and “escalate

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commitment” to their existing approach. The person or team working on the situation may not only believe that they are about to succeed (with just a little more effort and time) but also feel pressure not to lose face if they fail to handle the assigned situation. Moreover, they may resist seeking help. As experts (why they were dispatched in the first place), they may

have difficulty imagining who else might be better qualified to handle the situation.

The third reason that emergent crises are challenging is that they present crisis managers with all of the standard challenges of managing true crisis emergencies—the difficulty of recognizing novelty, the challenge of creativity and improvisation of new approaches and designs under stress, the painful realities of the errors and rough edges that arise when executing new and untested routines. But

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these standard challenges now arise in the context of organizations and teams that are already deployed and working on the situation. In a sudden crisis, obvious to all as a crisis, the response organizations may not be as resistant to engagement with others (senior political officials, for example) because they see immediately that the situation makes extraordinary demands and is not “business as usual.” In an emergent crisis, however, the initial responders are less likely to see the novelty and more likely to resent the intrusion of those they may regard as untrained and unneeded.

Political and Operational Engagement In Crises

By their nature—high stakes, urgency, contingency, and associated stress—significant emergency events are necessarily political as well as operational matters. Senior policy officials in any given setting are, in some sense, intrinsically political (they are usually directly elected to represent the interests of their constituents, or appointed by and serving at the pleasure of elected officials),

and they are generally uncontested in seniority to the operational commanders involved.

In effect, they have a choice about how engaged to be and what role to play in any given crisis situation. In routine situations, political officials may be willing to defer to the expertise of operational commanders and to rely on their assessments, decisions, and command systems. In situations that transcend the routine, by contrast, political officials are likely to feel impelled to be engaged, to be involved in decision making and communication about the situation—and perhaps to be (and be seen as) “in charge.” This is particularly likely to be true when a crisis situation persists for weeks or months, or when the initial response appears unsuccessful in some important dimensions.

Political officials, on one side, and operational commanders, on the other, may have very different styles and approaches to managing crisis situations. Operational commanders are generally quick to make assessments and oriented to act. They are prepared to move quickly, and their experience and instincts tell them that delays are costly. Politicians vary widely in their inclination to move quickly to action; but many prefer to keep their options open, to see how the situation evolves and avoid committing capacity at the outset. The differing inclinations of politicians and operational officials may be a source of conflict at the heart of crisis decision making, and in any case is an important situational feature to which crisis leaders need to pay attention and manage.

This is rendered more difficult, in the United States at least, and to some extent in many other countries, by the fact that nearly any major emergency will involve both multiple jurisdictions and multiple levels of government, rendering coordination both necessary and highly complex. In the United States, state and local government officials

have no formal hierarchical relationship to federal officials; they may both be acting in the same geographic space at the same time with separate or overlapping authority, and differing ideas about what needs to be done and how to do it.

In significant crisis events, both political and operational officials will have important—and different—roles to play. True crisis events—in which, by definition, the responders are operating beyond the bounds of what they have planned, practiced, and are resourced for—will necessarily confront senior decision makers with conflicts of values. Values are intrinsically political in nature and should involve determinations by people with the political legitimacy to authorize, warrant, and defend the choices made. Thus, political officials should be involved in the most crucial decisions involving conflicting priorities, and in the communication to the public describing and justifying the approaches being taken. Operational officials should help to frame those decisions, and should organize and direct the chosen responses, taking responsibility for the most effective possible execution under the circumstances. While these roles interact, and in some cases may partially overlap, governments need to develop effective processes for parsing the tasks and decisions as effectively as possible between these roles. This calls for the presence—and presence of mind—of both political and operational commanders working in concert in significant emergency events.

Conclusion

The main thrust of effort to improve disaster preparedness in the United States and elsewhere has, in effect, sought to develop enhanced capacity for dealing with routine emergencies. One widely used approach is to promote recognition of specific potential emergencies – for example, terrorism or emergent infectious disease – for which current

preparation is regarded as inadequate. Plans are developed for different scenarios, resources are secured, and responders are trained and exercised for the anticipated circumstances. The result: a new type of situation that might have presented itself as a crisis emergency has begun transformation into a routine emergency; the responders lack only actual experience to make this complete.

Leading people and organizations through such an intrinsically chaotic experience requires a form of expertise—expertise in adaptive leadership, a very different form of leadership than that used by successful leaders in routine emergencies.

While appropriate and desirable, this approach is insufficient. No society, no matter how technically sophisticated and well off, will anticipate all potential catastrophes and have sufficient resources to get ready in advance. If the arguments in this policy brief are correct, responders and senior policy officials must also be ready for the very different demands they will experience in crisis emergencies and emergent crises. Response leaders, under stress, will have to think their way through—developing understanding of a situation with potentially great and unknown uncertainties, analyzing possible courses of action, and then executing untried, untested, and unperfected sequences of actions. Leading people and organizations through such an intrinsically chaotic experience requires a form of expertise—expertise in adaptive leadership, a very different form of leadership than that used by successful leaders in routine emergencies.

The emergency response community – and government, the private sector, and the public at

large – need to explicitly recognize the unique features of such situations so that they will be as prepared as possible to perform effectively when novel and threatening events arise.

RELATED PUBLICATIONS

“Against Desperate Peril: High Performance in Emergency Preparation and Response,”

By Arnold M. Howitt and Herman B. Leonard, in Deborah Gibbon, ed., *Communicable Crises* (Information Age, 2007.)

Other papers by the authors are available online at the Taubman Center’s Program on Emergency Preparedness and Crisis Management website: www.ksg.harvard.edu/taubmancenter/emergencyprep

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